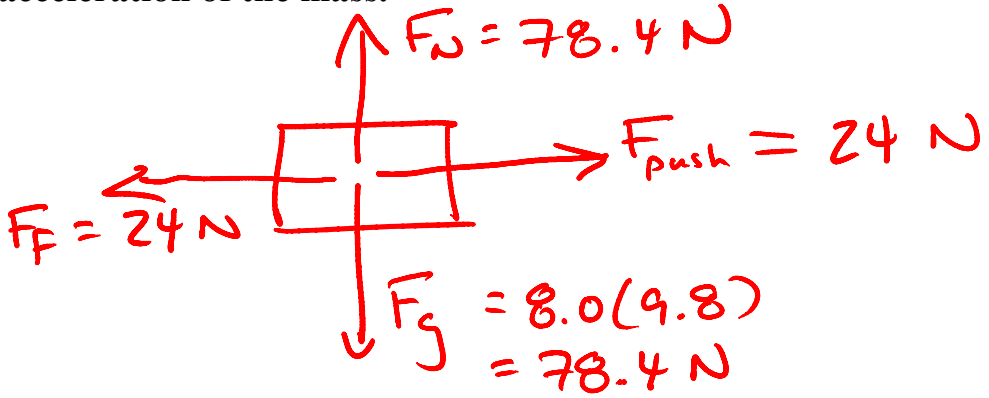
Example #1. An 8.0 kg mass is pushed along a horizontal surface at constant speed with a force of 24 N.

a) **Draw a f.b.d. showing all forces that act on the mass. Include the value for each force drawn.**

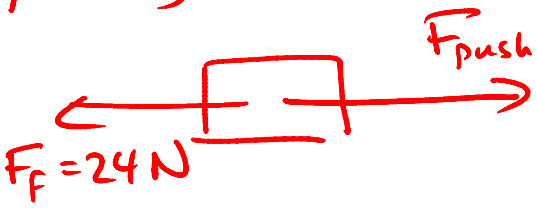
b) **The same 8.0 kg mass is now pushed with a force of 37 N. Find the acceleration of the mass.**

a)



→ all forces cancel out ($F_{Net} = 0$)

b) ignoring vert. forces (no change):



$F_{Net} = 37 - 24 = 13\ N$

$F_{Net} = ma$

$13 = 8.0a$

$\boxed{a = 1.6\ m/s^2}$